

## WHAT IS CLAIMED IS:

- 1 1. A transmission control system, comprising:
  - 2 1) a high speed side friction element for establishing a high speed side change
  - 3 gear; and
  - 4 2) a low speed side friction element for establishing a low speed side change gear,
  - 5 after a disengagement of the high speed side friction element the low speed side friction
  - 6 element making an engagement for carrying out a downshift from the high speed side
  - 7 change gear to the low speed side change gear,
  - 8 wherein
  - 9 when the downshift is carried out with an accelerator turned off,
  - 10 a stepping on the accelerator sensed in a period between the following times:
  - 11 i) a time for commanding a start of a transmission, and
  - 12 ii) a time for the low speed side friction element to start a conveyance of a
  - 13 torque,
  - 14 prevents a changeover to the low speed side change gear, thus keeping the
  - 15 high speed side change gear.
- 1 2. The transmission control system as claimed in claim 1, wherein
  - 2 when the changeover to the low speed side change gear is prevented,
  - 3 the high speed side friction element is made back to a state for an engagement,
  - 4 and
  - 5 the low speed side friction element is kept in a state brought about when the
  - 6 stepping on the accelerator is sensed.
- 1 3. The transmission control system as claimed in claim 1, wherein
  - 2 with the downshift' condition kept after the prevention of the changeover to the low
  - 3 speed side change gear, the downshift is carried out again.
- 1 4. The transmission control system as claimed in claim 1, wherein
  - 2 when the downshift is carried out with the accelerator turned off,
  - 3 the stepping on the accelerator sensed in a period between the following times:

4           i)    the time for the low speed side friction element to start the conveyance  
 5 of the torque, and  
 6           ii)   a time for ending the transmission to the low speed side change gear,  
 7               causes an engine torque restriction control for restricting a torque of an engine  
 8 to a certain engine torque, and  
 9               adds a duty ratio correction to an engagement command duty ratio of the low  
 10 speed side friction element, the thus added duty ratio correction being set up according to  
 11 the certain engine torque.

1   5.   The transmission control system as claimed in claim 4, wherein  
 2       when an end of the transmission to the low speed side change gear is sensed, the  
 3 engine torque restriction control is ended.

1   6.   The transmission control system as claimed in claim 4, wherein  
 2       the torque of the engine is restricted by controlling a throttle opening of a throttle  
 3 which is mounted to the engine.

1   7.   The transmission control system as claimed in claim 1, wherein the transmission  
 2 control system is included in an automatic transmission for a vehicle.

1   8.   A transmission control system, comprising:

2       1)    a high speed side friction element for establishing a high speed side change  
 3 gear; and

4       2)    a low speed side friction element for establishing a low speed side change gear,  
 5 after a disengagement of the high speed side friction element the low speed side friction  
 6 element making an engagement for carrying out a downshift from the high speed side  
 7 change gear to the low speed side change gear,

8       wherein

9       when the downshift is carried out with an accelerator turned off,

10       a stepping on the accelerator sensed in a period between the following times:

11       i)    a time for the low speed side friction element to start a conveyance of a  
 12 torque, and

13                    ii)    a time for ending a transmission to the low speed side change gear,  
14                    causes an engine torque restriction control for restricting a torque of an engine  
15 to a certain engine torque, and  
16                    adds a duty ratio correction to an engagement command duty ratio of the low  
17 speed side friction element, the thus added duty ratio correction being set up  
18 corresponding to the certain engine torque.

1    9.    The transmission control system as claimed in claim 8, wherein  
2           when an end of the transmission to the low speed side change gear is sensed, the  
3 engine torque restriction control is ended.

1    10.   The transmission control system as claimed in claim 8, wherein  
2           the torque of the engine is restricted by controlling a throttle opening of a throttle  
3 which is mounted to the engine.

1    11.   The transmission control system as claimed in claim 8, wherein the transmission  
2 control system is included in an automatic transmission for a vehicle.

1    12.   The transmission control system as claimed in claim 8, wherein  
2           the torque of the engine is restricted by varying a fuel injection.

1    13.   The transmission control system as claimed in claim 8, wherein  
2           the torque of the engine is restricted by varying an ignition timing.

1    14.   A transmission control system of an automatic transmission for a vehicle,  
2 comprising:

3           1)    a first means for establishing a high speed side change gear (3rd speed); and

4           2)    a second means for establishing a low speed side change gear, after a  
5 disengagement of the first means the second means making an engagement for carrying  
6 out a downshift from the high speed side change gear to the low speed side change gear,  
7 wherein

8           when the downshift is carried out with an accelerator turned off,

- 9 a stepping on the accelerator sensed in a period between the following times:
- 10 i) a time for commanding a start of a transmission, and
- 11 ii) a time for the second means to start a conveyance of a torque,
- 12 prevents a changeover to the low speed side change gear, thus keeping the
- 13 high speed side change gear.